

OPTIONAL FORM 98 (7-80)



## FAX TRANSMITTAL

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Trinity  
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GENERAL SERVICES ADMINISTRATION

Subject: Biological Evaluation of Dwarf Mistletoe in a  
Ponderosa Pine Plantation, Upper Lake RD (FPM Report N91-5)

To: Forest Supervisor, Mendocino NF

On January 23, 1991, David Schultz, entomologist, and I accompanied Jim Harvey, District Silviculturist, and others from the Upper Lake Ranger District to examine a ponderosa pine plantation with infections of western dwarf mistletoe, Arceuthobium campylopodum. The plantation is located on Streeter Ridge (T. 17 N., R. 10 W., section 15, SW 1/4).

The plantation is about 20 years old and is a result of the Round Mountain fire. In addition to ponderosa pine, there is a small amount of Douglas-fir scattered in the plantation. This plantation is being managed for timber production and as a shaded fuel break. At this time, it appears to be fully stocked and may require stocking control to reduce suppression and insect attacks. There was a residual stand following the fire on the other side of the road from the plantation that served as the source of dwarf mistletoe infection. This stand has since been harvested.

The primary question asked about this stand was whether direct suppression of dwarf mistletoe was needed and advantageous. The most immediate need to reduce the effect of dwarf mistletoe on this plantation has already been accomplished. The harvesting of the adjacent infected stand has removed the overstory source of infection thereby limiting infection of the upper crowns of the plantation trees and reducing unimpair spread of the pathogen. Will additional actions of removing all visibly infected trees or pruning infected limbs provide additional benefits? All dwarf mistletoe infections do not bear aerial shoots, therefore, we cannot successfully eradicate dwarf mistletoe from a stand by such activities. In most cases such as this, removing trees results in a positive response by both the tree and the dwarf mistletoe and there is the appearance of an increase in infection several years after the thinning activity.

The following information is taken from research done on western dwarf mistletoe and ponderosa pine in central Oregon in older suppressed natural stands on poorer sites. The main result of this work was that the effects of dwarf mistletoe in small ponderosa pine can be reduced through the normal practices of timber stand improvement. The main goal should be acceleration of tree growth. Proper selection of stands and trees is the key to most dwarf mistletoe management.

The following publications provide further information on the research that was conducted. Barrett, J.W., and L.F. Roth. 1985. Response of dwarf mistletoe-infested ponderosa pine to thinning: 1. Sapling growth. USDA For.





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Serv. Res. Pap. PNW-330. PNW For. and Range Exp. Sta., Portland, OR. 15p. and Roth, L.F., and J.W. Barrett. 1985. Response of dwarf mistletoe-infested ponderosa pine to thinning: 2. Dwarf mistletoe propagation. USDA For. Serv. Res. Pap. PNW-331. PNW For. and Range Exp. Sta., Portland, OR. 20p.

Stands such as we viewed are appropriate for dwarf mistletoe management through stand management. It is a productive stand with the potential to grow in height in excess of 10 inches per year. The level of dwarf mistletoe in the stand is moderate to low. Stand density is greater than the minimum stocking level required. And, crowns are developed sufficiently that the trees can be expected to respond to thinning and release activities.

Crop tree selection during thinning operations can aid in reducing future effects of dwarf mistletoe. Selected trees must show potential for good height growth as evidenced by a good crown. Non-host trees (Douglas-fir) in the plantation that have good growth characteristics and it appears they will respond to release can be retained to reduce dwarf mistletoe effects and provide other benefits. In addition, the following categories of pines as leave trees are recommended in order of decreasing priority.

- 1) Unparasitized dominants and codominants
- 2) Dominants and codominants with dwarf mistletoe in only the lower third of the crown
- 3) Dominants and codominants with dwarf mistletoe in only the lower half of the crown
- 4) Dominants and codominants with dwarf mistletoe in only the lower two-thirds of the crown
- 5) Intermediates with no visible dwarf mistletoe
- 6) Intermediates with dwarf mistletoe only in the lower third of the crown, or, if a tree is required for spacing, in the lower half of the crown
- 7) Trees below the general canopy having high vigor, good crowns, and no dwarf mistletoe

There was also a question of the benefit of pruning dwarf mistletoe infected limbs of leave trees during any thinning operation. As previously stated, this should not be done to attempt to eradicate dwarf mistletoe. However, removing obviously infected branches will reduce mistletoe seed production and may slow progression of the parasite up in the tree crowns. Also, removing infected branches at this early time may reduce the formation of witches' brooms later in the tree's life and thereby maintain a higher level of tree vigor.

In areas where the residual stand would be predominantly comprised of pines, the timing and type of slash treatment can influence subsequent mortality caused by pine engravers, *Ips* spp. If thinning or pruning is done in these stands, the following methods to reduce the probability of pine engraver buildups are listed in order of effectiveness.

- 1) Utilize the material to the smallest diameter possible and remove promptly from the site.
- 2) Burn all pine stems over 3 inches diameter within 6 weeks of cutting.
- 3) Lop all branches and buck stems over 3 inches diameter into 18 to 24 inch sections and expose to full sunlight.
- 4) Restrict cutting to the period from July through December.





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If you have any questions about this evaluation or need additional assistance, please contact me at (916) 246-5101.

A handwritten signature in cursive script, reading "Gregg DeNitto".

GREGG DeNITTO  
Forest Pathologist  
FPM Northern CA Shared Service Area

